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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/560,793 | 12/15/2005 | Xiangsheng Meng | CGL03/0043US01 | 7410 |

46395 7590 05/09/2008

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| EXAMINER | |
|---|---|
| KATAKAM, SUDHAKAR | |
| **ART UNIT** | **PAPER NUMBER** |
| 1621 | |
| **MAIL DATE** | **DELIVERY MODE** |
| 05/09/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/560,793 | MENG ET AL. | |
| | Examiner | Art Unit | |
| | Sudhakar Katakam | 1621 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3,5-10,12-14,16 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-10,12-14,16 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### Status of the Application

1. Receipt of Applicant's Remarks and Arguments filed on 11th March 2008 is acknowledged. However, the arguments for the rejections are not found persuasive and as such, the following rejection has been maintained. The claims 1, 3, 5-10, 12-14, 16-17 are remain rejected.

### *Response to Arguments*

2. Applicant's arguments filed on 11th March 2008 with respect to claims 1, 3, 5-10, 12-14, 16-17 have been considered but they are not persuasive for the following reasons:

With regard to the applicants' arguments on 112 first paragraph rejection, the amended claims do not give a specific solvent(s). The claims are still extremely broad. In particular claims read on all organic extractants other than ethyl acetate. The number of extractants encompassed by the listed solvents is vast. There is no information provided regarding a predictable correlation between the solvents and the higher yield of the 3-hydroxypropionic acid. The organic solvent for extraction may be anything other than ethyl acetate, so long as it has a boiling point lower than about 100°C and allows for separation and recovery. There is no structure given here to provide any guidance regarding which of the many encompassed organic solvents would be expected to allow for separation and recovery and which would not. Applicants have provided no guidance for regarding which solvents will predictably give higher yield.

With regard to the applicants' arguments on 103(a) rejection, it is common practice in the art to recover the product from the undesirable organic solvent by distillation process. It is desirable to use the suitable solvent, whose boiling point is less 100 degrees celsius so that the organic solvent can be distilled off without distilling the water which will form the aqueous solution of acrylic acid. The use of a low boiling extractant is obvious for reasons of ease of recovery of acrylic acid as an aqueous solution. Applicants' methyl acrylate and methyl propionate used as solvents differ only as adjacent homologues from the ethyl acetate used in the prior art and would be expected to have similar properties.

Applicants show how the cited reference differ from the instant invention, but the obviousness test under 35 U.S.C. 103 is whether the invention would have been obvious in view of the prior art taken as a whole. In re Metcalf et al. 157 U.S.P.Q. 423.I

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of invention was made, to have modified the reference teachings, such as using lower boiling point solvents, in the separation of 3-hydroxypropionic acid and acrylic acid, with a reasonable expectation of success.

With regard to the applicants' arguments on obviousness-type double patenting, the difference between the instant claims and the US patent claims is the "extractant". The instant claims are specific to the extractant other than ethyl acetate, whereas US patent claims are specific to ethyl acetate. However, the references teach other solvents in the purification 3-hy. Therefore, it is obvious to use the teachings of US patent with an alternative extractants, to make instant

applicants' process and to expect to produce a separate 3-hydroxypropionic acid from acrylic acid with a reasonable expectation of success. Therefore, the difference does not constitute a patentable distinction, because the claims of the present invention comprises the solvents, such as esters, which includes methyl acetate, which is obvious over the ethyl acetate of US patent claims.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 5-10, 12, 14 and 16-17 are again rejected under 35 U.S.C. 112, first paragraph for the reasons of record, because the specification, while being enabling for the process comprising separating and recovering 3-hydroxypropionic acid from an aqueous solution comprising 3-hydroxypropionic acid and acrylic acid using specific solvents exemplified in the examples, does not reasonably provide enablement for all of applicants broadly claimed solvents.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1, 3, 5-10, 12-14, 16-17 are again rejected under 35 U.S.C. 103(a) as being unpatentable over **Badische Anilin- & Soda-Frabrik AG** (GB 1,167,793) for the reasons of record.

***Double Patenting***

8. Claims 1, 3, 5-10, 12-14, 16-17 are provisionally again rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the claims of U.S. 7,279,598 in view of acknowledged prior art (see page 1 of specification), and **Badische Anilin- & Soda-Frabrik AG** (GB 1,167,793) taken with **Changzhou et al** (Huaxueshijie, 1997, 19(2), 77-79) for the reasons of record.

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136 (a).

10. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Correspondence***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhakar Katakam whose telephone number is 571-272-9929. The examiner can normally be reached on M-F 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Katakam

/Peter G O'Sullivan/

Primary Examiner, Art Unit 1621